DRAFT Automated Population of Proposed Improvement Fields in BridgeWorks by GFC 5/1/14

This document is intended to more fully describe how the proposed improvement fields are currently handled by the WSDOT BridgeWorks system, and suggest changes to bring these fields into alignment with WSDOT Bridge Management cost calculations. If possible, these changes will also include infrastructure asset data for use in financial statements meeting GASB 34 standards.

This document is also intended for use by the WSBIS Working Group, which is tasked with re-integrating the BPO and HLP bridge inventory databases.

And finally, this document is intended to provide specifications for updating the new version of BridgeWorks scheduled for deployment in February 2015.

Current System on BridgeWorks

Currently BridgeWorks automatically populates the following FHWA fields for every structure using a script embedded in tblProposedImprovements in the BridgeInventory database:

WSBIS Item	FHWA Item	Description
844	75A	Type of Work
846	75B	Work Method
847	76	Structure Improvement Length
867	94	Structure Cost
873	95	Roadway Cost
861	96	Total Cost
879	97	Estimate Year

This script uses two other fields in the database for calculation:

340	49	Bridge Length
352	28A	Lanes On

This automated population of these fields was originally created in late 2010, and implemented with the update of Bridgeworks in February 2011. At that time, several other fields were also created and displayed which have subsequently been hidden from the BridgeWorks form but which still exist in the database and calculation, including "proposed lanes on" and "proposed roadway width." This automated population also includes the ability for the BridgeWorks user to manually override each of these fields. This document simplifies the description of this auto-population process by ignoring the hidden and override fields.

Three of these fields are hard coded into this script and auto-populate as follows:

Type of Work = 35 (Bridge Rehab)
Work Method = 1 (by contract)
Estimate Year = 2010

The Structure Improvement Length is calculated and auto-populated as follows:

Structure Improvement Length = Bridge Length + 50 feet

The Total Cost field is the most involved calculation, though it's still very simple, and is based on a calculated deck area multiplied by a unit cost. The unit cost = $800 and is hard coded into the script.

proposed roadway width = (Lanes On x 12 feet) + 20 feet
proposed deck area = proposed roadway width x Structure Improvement Length

Total Cost = proposed deck area x $800 per square foot
Structure Cost = 0.50 x Total Cost
Roadway Cost = 0.10 x Total Cost

Suggested Changes to Current System on BridgeWorks

These suggested changes attempt to maintain most of the simplicity of the current system, but provide some adjustment to hard-coded input and additional flexibility to override the auto-population process.

Change # 1 - use Type of Work field to control auto-population

The Type of Work field would no longer be auto-populated, but would control auto-population for most of the remaining proposed improvement fields – see below. This field would be directly entered by users (or by batch update), and directly reported to the NBI as is.

Change # 2 – Restore Proposed Roadway Width field to input form

The Proposed Roadway Width and override fields already exist in the database, but have been removed from the input form. This change would restore both fields for auto-population and override.

Change # 3 – Create Deck Area Unit Cost field

This change would create a Deck Area Unit Cost field and override, and auto-populate it with the unit cost of $700 per SF. Note that the current hard-coded input is $800 per SF.

Change # 4 – Update Estimate Year

This change would update the auto-populated Estimate Year to 2014.

Change # 5 - No auto-population option

When the Type of Work field is left blank, all other proposed improvement fields are auto-populated to blank.

Change # 6 - Bridge Replacement Cost Calculation

When Type of Work is coded 31 or 32, the current cost calculation is retained, except as follows:

Structure Improvement Length = Bridge Length + 10 feet
Proposed Roadway Width = (Lanes On x 12 feet) + 14 feet

Change # 7 - Bridge Rehabilitation Cost Calculation

For all other Type of Work codes, the current cost calculation is retained, except as follows:

Structure Improvement Length = Bridge Length
Proposed Roadway Width = Approach Roadway Width + 2 feet
Deck Area Unit Cost = $400

WSBIS Item 397 Approach Roadway Width is used above.

What is not suggested for change.

Note that the basic cost calculation method – multiplying a proposed deck area by a proposed unit cost – is unchanged. Also note that the Work Method field is unchanged, and would be auto-populated = 1 with an override = 2. In summary, the following fields would have overrides:

Work Method
Structure Improvement Length
Proposed Roadway Width
Deck Area Unit Cost
Estimate Year